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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/507,079	02/18/2000	Masataka Kadowaki	10876.45US01	8450

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EXAMINER	
HANDAL, KAITY V	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/507,079	KADOWAKI ET AL.	
	Examiner	Art Unit	
	Kaity Handal	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,7-9 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 recites the limitation "the cooling unit" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trocciola et al. (USP 5,330,727) in view of in view of De Rycker et al. (USP 2,887,365).

Regarding claims 1, 7 and 9 Trocciola et al. discloses a CO remover comprising: an air mixer (19) for mixing air with hydrogen-rich gas including CO to generate mixed gas; a selective oxidative catalytic device (20, 30) for selectively oxidizing the CO by having the mixed gas pass through a selective oxidative catalyst bed (22, 32); the selective oxidative catalytic device including a gas passing tube (21, 31) that has the selective oxidative catalyst bed (22, 32); and at least one gas blending unit (18,

15) for blending part of the mixed gas that is passing through the selective oxidative catalyst bed (22, 32) further from an inner surface of the gas passing tube (21, 31) and remaining part of the mixed gas that is passing through the catalyst bed (22, 32) nearer to the inner surface of the gas passing tube (21, 31) at a point within the selective oxidative catalyst bed; wherein the gas blending unit (18, 15) is formed from an element partially obstructing the gas passing tube (Fig. 1); and the element (18, 15) is circularly disposed around the inner surface of the gas passing tube (Fig. 1).

Additionally the reference discloses that it is desired to maintain the temperature of the of the catalyst within predetermined limit to avoid deactivation of catalyst (C1/L45-60) and to minimize the carbon monoxide in the hydrogen rich gas (C2/L35-39) by, for example cooling medium baths (C7/L1 1-31), but the reference does not explicitly disclose the gas blending unit being formed from an element projecting inward from the inner surface of the gas passing tube, wherein the element is a washer ring.

De Rycker et al. teaches a reactor for performing exothermic gas reactions (C1/L15-35) wherein the reactor comprises: a gas passing tube (3) that has a catalyst bed (4); and at least one gas blending unit (9), for blending part of the gas that is passing through the catalyst bed (4) further from an inner surface of the gas passing tube (3) and remaining part of the gas that is passing through the catalyst bed (4) nearer to the inner surface of the gas passing tube (3) at a point within the catalyst bed; a double walled cylinder (Fig. 1, walls 1 and 3) with an annular

clearance (6) formed there between for a cooling liquid (C1/L15-22) to pass through, the cylinder being disposed at least upstream from the gas blending unit (9); wherein the gas blending unit (9) is formed from an element projecting inward form the inner surface of the gas passing tube so as to partially obstruct the gas passing tube (Fig. 1)) wherein the element (9) is circularly disposed around the inner surface of the gas passing tube (Fig. 1); wherein said element is a washer ring (Fig. 1).

Further De Rycker et al. teaches that the disclosed reactor structure offers an advantage of providing reactor with even temperatures throughout the catalyst bed and which provides more structure resistant to breaking and deformation (C1/L36-C3/L40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the CO remover of Trocciola et al. as taught by De Rycker et al. for the purpose of providing reactor with even temperatures throughout the catalyst bed and which provides more structure resistant to breaking and deformation.

Regarding the cooling liquid being water recited in claim 1 which is directed to a manner of operating disclosed device, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969) that

states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

Regarding claim 4, Trocciola et al. in view of De Rycker et al. disclose all of the claim limitations as set forth above. De Rycker further teaches a cooling unit which includes a heat sink/double walled layer (formed by tube 1 and wall 3) adjacent to the outer surface of the gas passing tube (3) (illustrated) in order to pre-heat the reaction mixture (C3/L65-72).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the CO remover of Trocciola et al. as taught by De Rycker et al. in order to pre-heat the reaction mixture.

Regarding claim 8, Trocciola et al. in view of De Rycker et al. disclose all of the claim limitations as set forth above. Additionally Trocciola et al. discloses the CO remover wherein a portion of the internal sectional area of the gas passing tube is obstructed by the element. While the reference does not explicitly disclose the specific percentage of the internal sectional area, which is being obstructed, the size of the element, and therefore the specific percentage of the internal sectional area, which is being obstructed, is not considered to confer patentability to the claims. As the amount of cooling provided to the remover is variable(s) that can be modified, among others, by adjusting said size of the element, and therefore the specific percentage of the internal sectional area which is being obstructed, with said cooling increasing as the size of the element and the specific percentage of the internal sectional area which is being obstructed is increased, the precise size of the element

would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed size of the element and the specific percentage of the internal sectional area, which is being obstructed, cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the size of the element and the specific percentage of the internal sectional area which is being obstructed in the remover of Trocciola et al. to obtain the desired cooling (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claim 12, Trocciola et al. in view of De Rycker et al. disclose all of the claim limitations as set forth above. Additionally Trocciola et al. discloses the CO remover further comprising: a cooling unit for cooling the selective oxidative catalyst bed from outside upstream form the gas blending unit (C7/L1 1-31); wherein the cooling unit includes a channel adjacent to an outer surface of the gas passing tube, through which cooling medium passes (C7/L11-31); and wherein a length between a start of the selective oxidative catalyst bed in a direction of a flow of the mixed gas and the gas blending unit (18) is no shorter than 1/3 of a length between the start of the selective oxidative catalyst bed and the end of the selective oxidative catalyst bed in the direction of the flow of the mixed gas (Fig. 1).

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 10249 or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

6. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

7. Applicant argues that elements identified in ('727) as a gas blending unit are cooling coils. It is noted that the previous examiner referred to 18, 24 and 34 as blending units. The rejection has been corrected to indicate that the blending units are 18 and 15, gases are bound to mix as they pass through units 18 and 15.

8. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, applicant argues that there is no motivation to combine ('727) with ('365). Examiner respectfully disagrees. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the CO remover of Trocciola et al. as taught by De Rycker et al. for the purpose of providing reactor with even temperatures throughout the catalyst bed and which provides more structure resistant to breaking and deformation.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., to selectively enclose only a portion of a catalyst bed as claimed) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

10. Applicant argues that there is no teaching in ('365) that cooling water is used. Regarding the cooling liquid being water recited in claim 1 which is directed to a manner of operating disclosed device, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the

apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KH

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1/17/2006

ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER